

B. CLAIM AMENDMENTS

Claims 1 and 2 (cancelled)

C1
Claim 3 (previously amended): A method of placing a component having leads and an alignment-indicating fiducial marker, wherein the fiducial marker includes a physically asymmetric portion of the component, the method comprising:

placing the component into a nest having an asymmetrically shaped recess corresponding to the physically asymmetric marker on the component;

detecting whether the physically asymmetric marker on the component mates with the asymmetrically shaped recess; and

placing the component on the substrate when mating of the physically asymmetric marker with the asymmetrically shaped recess is detected.

Claim 4 (cancelled)

Claim 5 (previously amended): The method of claim 3, wherein said detecting further comprises distinguishing when the component is in a predetermined alignment.

Claim 6 (previously amended): The method of claim 5, wherein said detecting further comprises:

creating a low pressure region in the recess; and

sensing a pressure in the low pressure region.

Claim 7 (previously amended): The method of claim 5, wherein said detecting further comprises sensing when a component contacts a surface of said recess.

Claim 8 (cancelled)

Claim 9 (previously amended): The method of claim 3, wherein detecting further comprises:
directing a pattern of radiation above and parallel to the recess in the nest;
receiving the radiation pattern that passes the recess;
comparing the received radiation pattern to a predetermined radiation pattern; and
determining whether the fiducial marker is mated with the asymmetrically shaped recess.

Claims 10-53 (cancelled)

Claim 54 (previously added): A method of placing a component having leads, comprising:
placing the component in a nest having a surface and an asymmetric recess defined therein;
detecting the alignment of the component in the recess;
comparing the detected alignment with a predetermined alignment; and
placing the component to a substrate when the detected alignment corresponds to the predetermined alignment.

Claim 55 (previously added): The method of claim 54, wherein said detecting further comprises focusing an alignment detector on the surface of the nest.

Claim 56 (previously added): The method of claim 54, wherein said detecting further comprises focusing an alignment detector above the nest.

Claim 57 (previously added): The method of claim 54, wherein said detecting further comprises focusing an alignment detector parallel to and adjacent the surface of the nest.

Claim 58 (previously added): The method of claim 54, further comprising picking the component from the nest.

Claim 59 (previously added): The method of claim 58, further comprising aligning the component.

C 1

Claim 60 (previously added): The method of claim 59, further comprising replacing the component in the recess of the nest.

Claim 61 (canceled)

Claim 62 (previously amended): A method of placing a component having leads and a fiducial marker having an alignment-indicating physical shape, the method comprising:

- forming a recess in a nest corresponding to (the physical shape) of the fiducial marker;
- placing the component in the recess;
- detecting whether the physical shape of the fiducial marker mates with the recess; and
- placing the component on the substrate when mating of the physical shape of the fiducial marker with the recess is detected.

Claim 63 (previously added): The method of claim 62, wherein said detecting further comprises determining whether the component extends beyond the surface of the nest.

Claim 64 (previously amended): The method of claim 62, wherein said recess corresponds to a beveled edge of the component.

Claims 65-70 (cancelled)

Claim 71 (previously added): A method of placing a component having leads and an alignment indicating fiducial marker, comprising:

- directing a pattern of radiation across a nest having an asymmetric recess corresponding to an asymmetric shape of the component;
- sensing the radiation pattern passing across the nest;
- detecting the alignment of the fiducial marker on the component;
- comparing the detected fiducial alignment with a predetermined fiducial alignment; and
- placing the component to a substrate when the detected fiducial alignment corresponds to the predetermined fiducial alignment.

a

Applicant : Gamel et al.
Serial No. : 09/466,545
Filed : December 17, 1999
Page : 5

PATENT
96794DIV3

Claim 72 (previously added): The method of claim 71, wherein said directing further comprises disrupting the radiation pattern when a component is misaligned in the nest recess.

Claim 73 (previously added): The method of claim 71, wherein said comparing further comprises comparing the radiation pattern passing across the nest to a known radiation pattern.

Claims 74-82 (cancelled)

C1